I claim:

1. A method of operating a discharge lamp, the discharge lamp having an arc discharge tube having a substantially cylindrical inner cavity, the arc discharge tube when operated in a vertical orientation exhibiting an acoustic response spectrum at an upper region of the arc tube, the acoustic response spectrum including a frequency region at which a first longitudinal mode is excited, the acoustic response spectrum having a maximum response at a first frequency, f_{max}, a minimum response at a second frequency f_{min}, and an inversion point at a third frequency, f_{inv}, wherein $f_{max}<f_{inv}$ and f_{inv} is between f_{max} and f_{min}, the method comprising:

adding a first longitudinal mode resonance excitation frequency, f_{exc}, to the modulated lamp power wherein $f_{inv}-0.2*f_{inv} \leq f_{exc} < f_{inv}$.

2. The method of claim 1, wherein $f_{inv}-0.1*f_{inv} \leq f_{exc} < f_{inv}$.

3. The method of claim 1, wherein $f_{inv}-2kHz \leq f_{exc} < f_{inv}$.

4. The method of claim 1, wherein the first longitudinal mode frequency is added by modulating an amplitude of an input sine wave voltage powering the lamp.

5. The method of claim 4, wherein the amplitude modulation has a modulation index of 0.1 to 0.15.

6. The method of claim 1, wherein the first longitudinal mode frequency is added by superimposing the first longitudinal mode frequency on a switched-DC carrier input for the lamp.

7. The method of claim 1, wherein the first longitudinal mode frequency is a fixed frequency.

8. The method of claim 1, wherein the first longitudinal mode frequency is a frequency sweep through a range of frequencies.

9. The method of claim 1, wherein the f_{exc} is approximately equal to f_{max}.

10. A method of operating a discharge lamp, the discharge lamp having an arc discharge tube having a substantially cylindrical inner cavity, the arc discharge tube when operated in a vertical orientation exhibiting an acoustic response spectrum at an upper region of the arc tube, the acoustic response spectrum including a frequency region at which a first longitudinal mode is excited, the acoustic response spectrum having a maximum response at a first frequency, f_{max}, a minimum response at a second frequency f_{min}, and an inversion point at a third frequency, f_{inv}, wherein $f_{max}<f_{inv}$ and f_{inv} is between f_{max} and f_{min}, the method comprising the steps of:

modulating lamp power with at least one arc-straightening frequency; and

adding a first longitudinal mode resonance excitation frequency, f_{exc}, to the modulated lamp power wherein f_{inv}-0.2*$f_{inv} \leq f_{exc} < f_{inv}$.

11. The method of claim 10, wherein f_{inv}-0.1*$f_{inv} \leq f_{exc} < f_{inv}$.

12. The method of claim 10, wherein f_{inv}-2kHz $\leq f_{exc} < f_{inv}$.

13. The method of claim 10, wherein the first longitudinal mode frequency is added by modulating an amplitude of an input sine wave voltage powering the lamp.

14. The method of claim 13, wherein the amplitude modulation has a modulation index of 0.1 to 0.15.

15. The method of claim 10, wherein the first longitudinal mode frequency is added by superimposing the first longitudinal mode frequency on a switched-DC carrier input for the lamp.

16. The method of claim 10, wherein the at least one arc-straightening frequency is a frequency sweep through the arc-straightening frequency range.

17. The method of claim 16, wherein the frequency sweep is at a sweep rate of 100-1,000 Hz.

18. The method of claim 10, wherein the at least one arc-straightening frequency is approximately a second azimuthal mode frequency.

19. The method of claim 10, wherein the first longitudinal mode frequency is a fixed frequency.

20. The method of claim 10, wherein the first longitudinal mode frequency is a frequency sweep through a range of frequencies.

21. The method of claim 10, wherein the f_{exc} is approximately equal to f_{max}.